

# ***Journal of The Bromeliad Society***



**VOLUME 48**

•

**JANUARY-FEBRUARY 1998**

•

**NUMBER 1**

# Journal of the Bromeliad Society

©1998 by the Bromeliad Society International

Vol. 48, No. 1

January–February, 1998

**Editor:** Chet Blackburn, 720 Millertown Road, Auburn, California 95603.

Telephone and Fax: 530-885-0201, E-mail: [blackburn@newworld.net](mailto:blackburn@newworld.net)

**Editorial Advisory Board:** David H. Benzing, Gregory K. Brown, Pamela Koide, Thomas U. Lineham, Jr., Harry E. Luther, Robert W. Read, Walter Till.

**Cover photographs.** Cover photographs. Front: The foliage of *Tillandsia brachycaulos* blushes to a brilliant red before coming into bloom. Once the dozen or so lilac-petaled flowers fade, the plant returns to its normal green coloration. Native from Mexico to Panama. Photograph by Tom Koerber. Back: A Christmas tree composed of blooming *Aechmea fasciata* at the Del Mar (California) Fair. Photograph courtesy of Kent's Bromeliads.

## CONTENTS

- 3 *Tillandsia tectorum* in Peru **Lee Moore**
- 6 Bromelain Activity in the Leaf Tissue of *Bromelia antiacantha* **Helenice Mercier and Marisa K. Yoshida**
- 12 Old Bluey **Ann Bartel**
- 13 A Shade House in the Northern Garden **Paul Wingert**
- 14 A Word of Warning to New Members **Chet Blackburn**
- 17 Ritual use of Bromeliads in the Maize Planting Ceremony of the Lenca of Honduras: Part II **Sylvia Méluzin**
- 24 Resolution of the SBBr Governing Board  
**Luiz Felipe N. de Carvalho and Elton M.C. Leme**
- 25 Howdy Partner! **Allyn Pearlman**
- 26 A Moment of Magic **Keith Golinski**
- 28 Recent Contributions to the BSI **Jerry Raack**
- 29 Cultivar Registration Update **Ellen Baskerville**
- 33 Ortgiesia: A Subgenus of *Aechmea*  
**Peter Franklin and Derek Butcher**
- 37 **Book Review:** *Canistrum*: Bromeliads of the Atlantic Forest by  
Elton M.C. Leme **Tom Lineham**

The *Journal*, ISSN 0090-8738, is published bimonthly at Orlando, Florida by the Bromeliad Society International. Articles and photographs are earnestly solicited. Closing date is 60 days before month of issue. Advertising rates are listed in the advertising section. Permission is granted to reprint articles in the *Journal*, in whole or in part, when credit is given to the author and to the Bromeliad Society International. **Please address all correspondence about articles and advertising to the editor.**

Subscription price (in U.S. \$) is included in the 12-month membership dues: single—\$25.00, dual (two members at one address receiving one *Journal*)—\$30.00, fellowship—\$40.00, life—\$750.00 Please add \$8.00 for international surface mail, except for life members. For first class mail add \$10.00, for airmail please add \$18.00.

**Please address all membership and subscription correspondence to Membership Secretary Carolyn Schoenau, P.O. Box 12981, Gainesville, FL 32604. Telephone 352-372-6589**

**Back Issues:** All single copies \$4.50 1st class postpaid to ZIP addresses, other countries \$5.50 airmail postpaid; per volume \$20.00 to ZIP addresses, \$25.00 to other addresses, 3rd class or surface postpaid. Order back issues from BSI Publications, c/o Sally Thompson, 29275 N.E. Putnam Rd., Newberg, OR 97132, USA; make checks drawn on U.S. banks, bank drafts, or money orders payable to B.S.I. Prices are subject to change.

Printed by Fidelity Press, Orlando, Florida.

## *Tillandsia tectorum* in Peru

Lee Moore

Photographs by the author

Sought for its delicate ornamental silvery foliage, This *Tillandsia* grows abundantly in colonies along the western slopes of the Andean continental divide of northern Peru and southern Ecuador. The largest variety is found in Peru, growing at elevations between 1600 - 2100 meters above sea level. Some grow to the size of a horse's tail but most are closer in size to a squirrel's or fox's tail. They are usually found in dry areas on north faces of slopes and steep cliffs along mountain rivers. They typically have only a rudimentary root system attaching them loosely to rocks and underbrush between agave and cacti. They derive the water they need from humidity rising above the rivers. However, during the mountain rainy season (Jan-Apr), they enjoy torrential rain that usually stimulates them into bloom.

The trip over the mountains and down into the valley of Huancabamba is a hairy one, with a 5,000-foot drop-off from the narrow rock and mud road plastered along ledges. This is especially so when the cloud belt encircling the mountains is reached. With zero to twenty-foot visibility, it is difficult to see the edge of the narrow road that drops off into a deep abyss. One is constantly aware that this could easily become a one way trip...that one way being straight down! Adding to the anxiety is the potential for meeting one of the giant cargo trucks rumbling down the road from the other direction. Besides the obvious concern of a head-on collision, there is also the difficulty of negotiating around them on the road's hairpin curves even should you manage to avoid them. One or the other driver has to back up to the nearest point wide enough to pass. Usually it is the driver going up the mountain that has to do this, according to an unofficial courtesy of the road widely respected by all who drive these Andean roads. After crossing the top at about 3,000 meters, we dropped down into the pristine valley and town of Huancabamba, nestled between two great mountain ranges of the Andean cordillera.

We were fortunate to have arrived right after Christmas. Each year, local people collect thousands of these plants to use as simulated snow in their nativity scene in the town plaza. Afterwards, they are dumped into a heap at the edge of town for children to jump up and down on the soft fluffy pile. It was simply a matter of asking the locals where they found them...but not as simple to get there...or to collect! It involved another trip up another valley on another hairy road.

There seems to be little danger of this species becoming endangered in this area even though they are collected by the thousands each year. Most of them grow on steep canyon walls, which are totally inaccessible, on the opposite side of a great roaring river a mile below. Accessible plants have to be found on our side of the river, which is not an easy task.





Figure 1.  
Valley and town of Huancabamba, Peru

Even then, collecting them is very difficult and dangerous. We hired five campesinos and two horses from a small farm on the mountainside. We had to walk for another two hours deep down into the canyon on a steep narrow footpath until we reached a ledge just above the river where the plants could be reached. Only a small number of plants were within reach. The rest were collected by rappelling down and swinging by ropes along the canyon walls, and by dislodging, as best we could, clusters above us. Since they were loosely rooted, they would tumble down to us. The horses made several trips back up the narrow mountain trail carrying our collections until we had what we needed. Tragedy struck on the last trip up the mountain, as one of the horses slipped and fell to his death, carrying his cargo 1,000 feet to the river below. This was a sad sight and it put a damper on an otherwise pleasant day.

All in all, it was an exciting trip. For some of the most spectacular scenery to be found anywhere in the world, there is nothing like the Andes Mountains. So, if you decide to go to Huancabamba to collect the illusive and difficult *Tillandsia tectorum*...enjoy yourself; it is a beautiful adventure.

Miami, Florida



Figure 2.  
Pile of recently collected *Tillandsia tectorum*



Figure 3.  
*Tillandsia tectorum* being loaded on a horse. Not long after this photograph was taken, the horse lost its life in a fall into the river gorge.

# Bromelain Activity in the Leaf Tissue of *Bromelia antiacantha*

Helenice Mercier<sup>1</sup> & Marisa K. Yoshida<sup>2</sup>

## ABSTRACT

*Bromelia antiacantha* Bertol, a species intensively collected because of its medicinal properties, was micropropagated and the regenerated plantlets of a superior clone were used for bromelain activity assays. The specific proteolytic activity in the young leaf tissue of the regenerated plantlets was 22% higher than in a 6 month old *in vitro* seedling culture. This result could open the possibility of bromelain production from tissue culture of this wild bromeliad, which is not often cultivated.

## INTRODUCTION

*Bromelia antiacantha* Bertol is a terrestrial bromeliad, native to southern Brazil and Uruguay (Padilla, 1986). In Brazil, their fruits have been intensively collected from the wild and processed for medical use. Although proteolytic enzymes are widely distributed in plants, only a few families contain a high enough level to be exploited commercially, as in the case of Bromeliaceae (Heinicke and Gortner, 1957).

It has been demonstrated that various species of the genus *Bromelia* contain bromelains (Natalucci *et al.* 1985; Nataluci *et al.* 1988, Caffini *et al.* 1988), but only those from the pineapple are of commercial importance (Taussig and Batkin, 1988). These proteolytic enzymes have many applications in medicine such as the treatment of inflammation sickness associated with edema, inflammation of the respiratory tract, inflammation caused by circulation disturbances, and to enhance the activity of antibiotics (Lotz-Winter, 1990).

Although the physiological function of the proteinases in plants is not completely known, it is evident, however that proteolysis has an important role in reducing the loss of nitrogen and carbon when protein is catabolized and derived amino acids are transported to areas of growth or storage (Vierstra, 1993).

The plant tissue culture system was tried as a production source of physiologically active proteolytic enzymes from *B. antiacantha*. Comparative studies of bromelain activity in the leaves of regenerants and the leaves of *in vitro* germinated plantlets were assayed.

<sup>1</sup> Department of Botany, University of São Paulo CP 11461, CEP 05422-970, São Paulo, SP - Brazil

<sup>2</sup> Department of Botany, University of São Paulo CP 11461, CEP 05422-970, São Paulo, SP - Brazil

## MATERIALS AND METHODS

### Germination and multiplication

Mature seeds of *Bromelia antiacantha* Bertol were surface sterilized with 5% NaOCl for 30 minutes, rinsed 3 times in sterile distilled water, and cultured on a Kn (Knudson, 1946) agar-gelified medium without the addition of growth regulators (figure 4).

After 2 months of *in vitro* culture, 30 plantlets were randomly selected for micropropagation experiments using long basal leaf segments (1.5 cm) as explants. The multiplication media employed consisted of Kn macronutrients, MS (Murashige and Skoog, 1962) micronutrients, and 0.2 mg/l naphthalene-acetic acid (NAA) combined with 6-benzylaminopurine (BAP) (Table 1). Regenerated shoots arose after 3 months of culture. Each clone was represented by 4-5 explants obtained from the mother plant.

For rooting, isolated shoots were transferred to a Kn basal medium supplemented with 0.1 mg/l NAA. Further culture on a Kn medium for 2 months was necessary for shoot development.

All cultures were maintained at  $26 \pm ^\circ \text{C}$  under a 16 h photoperiod and an irradiance of  $10 \text{ W/m}^2$ .

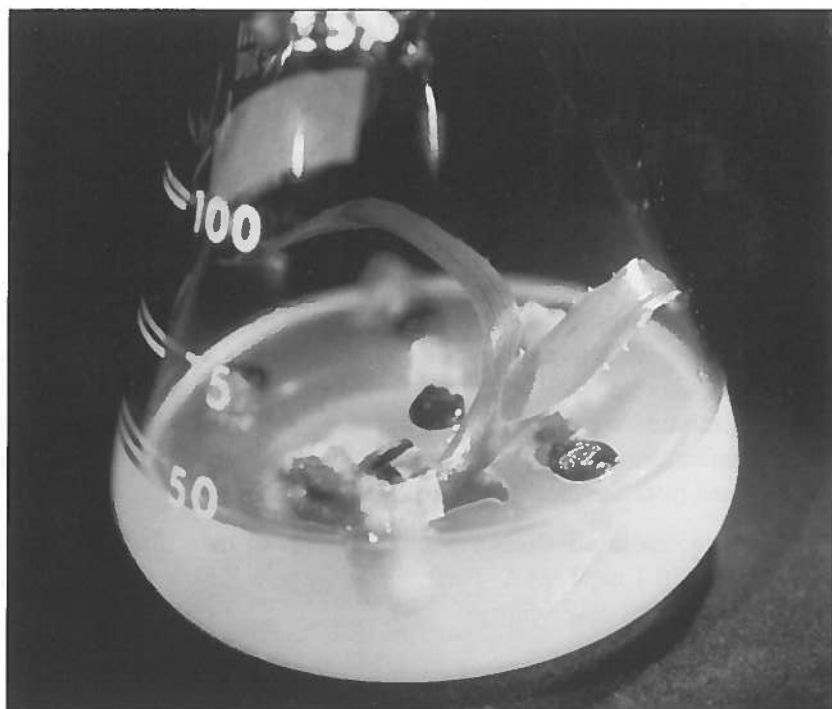
### Assay for bromelain activity

The leaf extracts of regenerated plantlets as well as 6-month old plantlets germinated *in vitro* and cultured on Kn medium, were prepared. One gram of fresh leaf tissue was extracted with 10 ml of 0.03M phosphate buffer (PH 7.5), followed by paper filtration. The homogenate was centrifuged at 10,500 rpm for 20 minutes at  $4^\circ \text{C}$ . The supernatant was taken for bromelain activity determination. Proteolytic activity was determined by the casein digestion method (Murachi, 1970), using L-tyrosine as a standard. Total soluble protein was estimated by the Bradford (1976) method, using bovine serum albumin as a standard. Specific bromelain activity was expressed as mg tyrosine per mg bovine serum albumin.

The data presented are the mean value of two independent series of experiments each with three replicated determinations.

### Results and Discussion

Approximately 100% sterilized seeds produced normal plants on the germination medium. After 2 months, *in vitro* grown seedlings produced 4-5 leaves. Basal leaf segments isolated from these plants developed into normal shoots which were then rooted on a Kn medium supplemented with a low auxin concentration. The best growth regulator combination for bud proliferation was 0.2 mg/l NAA and 1.0 mg/l BAP (figure 4). Other concentrations of NAA had been preliminarily tested (data not shown) and 0.2 mg/l presented the best results.



Photograph by Helenice Mercier

Figure 4.

*In vitro* germination of *Bromelia antiacantha* on Knudson medium.

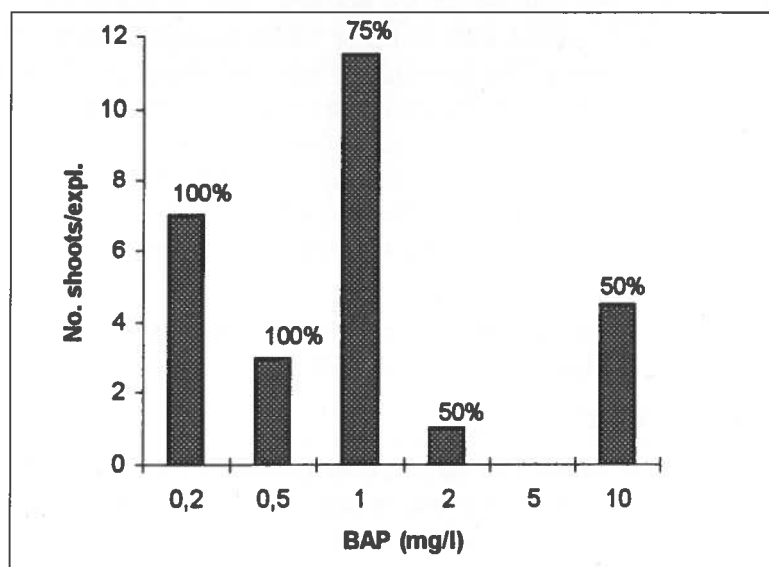


Figure 5.

The effect of BAP concentration in combination with 0.2 mg/l of NAA on the average number of shoots per explant after 3 months in culture on Knudson medium.

For the bromeliad *Dyckia macedoi*, Mercier and Kerbaux (1993) have shown that low levels of auxin induce better multiplication rates.

Adventitious buds were formed directly or from protuberances arising from the basal parts of the leaves. Seventy five percent of the leaves produced on an average 11 new shoots (figure 5).

The regenerated plants were selected for vigor and rapid development after 2 months of culture on a basal Kn medium. The clone chosen for the assay of bromelain activity was from explants derived of the same mother plant, and multiplied on a Kn medium supplemented with 0.2 mg/l NAA and 1.0 mg/l BAP. Further cultures for rooting (Kn + 0.1mg/l NAA) and shoot development (hormone free KN) were necessary before using the leaves of this clone for the experiments on bromelain activity. A comparison was done between leaves of 6 month old plantlets of *B. antiacantha* grown *in vitro* and regenerated plantlets (table 1).

TABLE 1

Bromelains from crude leaf extracts of regenerated plantlets and 6 month old *in vitro* cultured plantlets of *Bromelia antiacantha*.

	Total proteolytic activity (mg tyr/g fw min)*	Total protein (mg alb/g fw min)	Specific activity (mg tyr/mg alb)*
Leaves of regenerated plantlets	0.68 ± 0.02	103.04 ± 4.21	0.0066
Leaves of <i>in vitro</i> cultured plantlets	0.81 ± 0.04	149.03 ± 6.32	0.0054

\*tyr = tyrosine; alb = albumin; fw = fresh weight

The total leaf proteolytic activity of *in vitro* cultured plantlets was higher than for regenerated plantlets. Regarding specific bromelain activity, an increase of 22 percent was observed. This result indicated that the occurrence of regeneration may have an influence on the production of bromelains, although their function in plant metabolism is unknown. Furthermore, regenerated plants and/or tissue culture could be used as a more effective source of bromelains.

Apte *et al.* (1979) demonstrated the presence of bromelains in callus tissue of *Ananas sativus*, (pineapple) at different stages of growth and also in young leaves of regenerants as well as the leaves of mature plants. The proteolytic activity in the leaves of mature plants was significantly higher and activities in young leaves of regenerated plantlets and callus tissue were comparable. These authors have suggested that tissue differentiation may not have any influence on proteolytic enzymes but plant growth may have a strong influence on the synthesis of bromelains. In mature pineapple plant stems, Heinicke and Gortner (1957) detected the highest concentration of proteases in the lower portion of this

organ. The less mature tissues of *Ananas comosus* contained little or no detectable proteases.

Our results showed that it is possible to select a clone from plantlets with a higher specific activity of bromelains even at an early stage of development. The transference of this clone to *ex vitro* cultivation is now being carried out. Leaves in different stages of development and from mature plants will be compared.

#### ACKNOWLEDGEMENTS

The authors thank CNPq for the scholarship given to M.K.Y.

#### REFERENCES

- Apte, P.V., Kakliv, G.S. & Heble, M.R. (1979). Proteolytic enzymes (bromelains) in tissue cultures of *Ananas sativus* (pineapple). *Plant Scie. Letters* 14:57-62.
- Bradford, M.M. (1976). A rapid and sensitive method for the quantification of microgram quantities of protein utilizing the principle of protein-dye binding. *Analytical Biochem.* 72:248-251.
- Caffini, N.O., Natalucci, C.L., Priolo, N.S., Buttazzoni, M.S. (1988). Proteasas de Bromeliaceae: aislamiento de una fitoproteasa sulfhidriclica presente en frutos de *Bromelia serra* Griseb. *Acta Farm. Bonaerense* 7:9-14.
- Heinicke, R.M. & Gortner, W.A. (1957). Stem bromelain – a new protease preparation from pineapple plants. *Economic Bot.* 11:225-234.
- Knudson, L. (1946). A new nutrient solution for germination of orchid seed. *Amer. Orch. Soc. Bull.* 15:214-217.
- Lotz-Winter, H (1990). On the pharmacology of bromelain: an update with special regard to animal studies on dose-dependent effects. *Planta Med.* 56:249-253.
- Mercier, H. & Kerbaudy, G.B. (1993). Micropropagation of *Dyckia macedoi* – an endangered endemic Brazilian bromeliad. *Bot. Gard. Microp. News.* 2:70-72.
- Murachi, T. (1970). Bromelain enzymes. In: Perlmann, G.E. & Lorrard, L. (Eds) *Methods in Enzymology*, vol 19:273-284.
- Murashige, T. & Skoog, F. (1962). A revised medium for rapid growth and bioassays with tobacco tissue cultures. *Physiol. Plant.* 15:473-497.
- Nataluci, C.L., Priolo, N.S., Buttazzoni, M.S., & Caffini, N.O. (1985). Proteasas de Bromeliaceae: separacion, caracterozacion, y fraccionamiento de una proteasa aislada de frutos de *Bromelia hieronymi* Mez. *Acta Farm. Bonaerense* 7:179-185.
- , ———, Lopez, L.M.I., Caffini N.O. (1988). Proteasas de Bromeliaceae: separacion y purificacion de sulfhidril-proteasas presentes en frutos de *Bromeliad balansae* Mez. *Acta Farm. Bonaerense* 7:179-185.
- Padilla, V. (1986) *Bromeliads*. Crown Publishers Inc., New York.
- Taussig, S.T. & Batkin S. (1988). Bromelin, the enzyme complex of pineapple (*Ananas comosus*) and its clinical application: an update. *J. of Ethnopharmacology* 22:191-203.
- Vierstra, D.R. (1993) Protein degradation in plants. *Annu. Rev. Physiol. Plant Mol. Biol.* 44:385-410.

Department of Botany, University of Sao Paulo  
C.P. 11461 CEP 05422-970  
São Paulo, S.P., Brazil

## BSI now Accepting Credit Cards

The Bromeliad Society International is now accepting credit cards for membership dues, publications, and other products and services available through the BSI. This should especially benefit our members who reside outside the borders of the USA, where making payments using other currencies can sometimes be complicated or time consuming.

For the time being, only Master Card and Visa are being accepted. Our thanks go to director Jacqui Watts, who initiated the proposal, and to Don Garrison, Clyde Jackson, Carolyn Schoenau, and Sally Thompson who implemented it. The San Diego Bromeliad Society donated the terminal and card readers that were used at the San Diego World Conference.

Below is a form that should be used when making credit card purchases. You may request the form from membership secretary Carolyn Schoenau, or you may make photocopies of the one below to send in with your order

---

---

### BSI CREDIT CARD PURCHASE FORM

Please complete the entire form. Only Master Card and Visa are accepted.

- 1) Master Card or Visa? (Please circle one).
- 2) Your Name as it appears on your credit card (Please print):  
\_\_\_\_\_
- 3) Credit card number: \_\_\_\_\_
- 4) Expiration date on credit card: \_\_\_\_\_
- 5) Amount of purchase: \_\_\_\_\_
- 6) Authorization line (Please sign here):  
\_\_\_\_\_

When using this form for your membership renewal, please return it with the completed BSI invoice. When using the form for a new membership, please include a BSI Application for Membership.

When ordering publications or other materials from BSI Publications, please enclose the signed form with your order.

---

---



# Old Bluey

Anne Bartel

Eleven years ago I owned nine different bromeliads. At the time, I never knew any of their names, or for that matter, even their genus. I knew nothing of their culture and they were shifted many times to full sun, full shade, and many degrees between. Eight of them grew and multiplied, resulting in mass plantings everywhere, but number nine, named by me as “Old Bluey,” did nothing. He never proliferated like the others, he just sat there and grew very, very slowly.

Three years ago, somewhere around “Old Bluey’s” eighth birthday, I joined a bromeliad group and started avidly learning about bromeliads and collecting them in quantities. I also learned that “Old Bluey” had a botanical name, or more correctly, botanical names. He was first known as *Vriesea gigantea* ‘Nova,’ but now goes under the name as *Vriesea gigantea* var. *seideliana*. Even while undergoing a name-tag change or two, he was still “Old Bluey” to me.

Ever had a plant that’s a “lemon” from the moment you owned it? I have. No matter what you do...relocate, repot, reposition, reanything,...it will always remain a “lemon.” Well, “Old Bluey” was just the opposite. No matter what happened to him, he came out smiling. Tree branches falling on him produced not even a bent leaf. He grew neglected in a dark corner where he was covered with dead leaves—it didn’t phase him; his shape and color remained perfect and even the grasshoppers avoided him

Two years ago, as part of a learning process, I decided to enter a few plants in a general plant show and find out later what was wrong with them. I didn’t have a decent *Vriesea* to enter (I water too much) and “Old Bluey” turned out to be the only half-way respectable candidate. I cleaned nine years of accumulated debris off him, taking nearly two days to accomplish it, and repotted him and scrubbed him thoroughly. When I started to pack my show plants into my two-door sports car, there was no room for “Old Bluey.” He was just too big. For the next few minutes I wavered back and forth between taking him or casting him aside. Yes I will. No I won’t. Yes...no..., the pressure was getting to me. I finally decided that I would take him, but I had to jam him on the floor behind the driver’s seat, fully squashed! Typical of “Old Bluey,” when I pulled him out at the show, he sprang back to perfect shape.

Two days later, I received a phone call that “Old Bluey” had not only won an award as the champion bromeliad, but he was also designated as the champion pot plant of the whole show! The shock and adrenalin that flowed through me couldn’t be described. He returned home as “The Champion,” and was never to be called “Old Bluey” again! He also had earned a place in the prime position of the shadehouse.

Several weeks ago, “Champ,” now eleven years old, sent me into a panic. His center leaves became distorted, and my first thought was that some weird virus – or worse – was sending him crazy. Twice a day I checked him, only to eventually realize that “Champ” was coming into flower! It’s now nine weeks later and his inflorescence is still growing skywards. I may have to cut a hole in the shadehouse roof. And I will,—just for him!

Kuranda, Queensland

Reprinted in part from *BROMELETTER*, 35(2):12

## A Shade House in the Northern Garden

Paul Wingert

A trip to Florida I took back at the end of March combined two concert performances by the Detroit Symphony Orchestra in West Palm Beach with a memorable visit with Lou and Diane Wilson at their home in Punta Gorda. The trip rekindled some of my passions for growing bromeliads. I saw (and purchased) many new varieties of bromeliads. I also found new inspiration for hybridizing bromeliads. The most profound impact the trip had on me, however, was seeing the growing conditions that the serious growers provide for their plants.

All of the Florida bromeliad growers have a shade house covered with approximately 50% shade cloth. Providing light in the proper intensity is the single greatest determining factor of a plant’s character and quality. I have seen many examples where plants of a given species were grown under vastly different light conditions, and after a year it would not be easy to recognize that the plants were indeed the same species.

Growing plants under shade cloth gives a certain element of control. The full spectrum of sunlight reaches the plants, but with obviously less intensity. Air is able to circulate freely and the plants receive benefits daily from the morning dew. The vibrant colors, especially of the many neoregelias that dominate many collections in Florida, seem to glow under these conditions.

While the sun in Michigan may not reach the intensity that it does in Florida, midday sun is still strong enough from May through July to cause burning of leaves in many varieties. I’ve experienced the disappointment of having beautiful plants rendered “unshow-worthy” by a couple of sunburn spots (or worse) on the leaves. Plants are especially vulnerable during the period of acclimatization when they are first exposed outdoors in the spring. So, this past April I became determined to provide the best possible conditions for my bromeliads (oh, and a couple of orchids, too). I selected a location in what had been my vegetable garden (I’m getting tired of raising broccoli for the

groundhogs). I erected a simple wood structure of 2" by 2" lumber and attached a piece of 48% shade cloth to it. This can be ordered to size from many greenhouse supply companies. I placed landscape fabric on the ground to suppress weeds and control mud splattering on the leaves. I built a couple of simple benches, partly with the aim of having the plants look organized and partly as a means of improving air circulation for the plants.

Then, in early May, the plants were placed in their summer home where they resided until cold weather threatened in early October. I have been thoroughly satisfied with the results and would recommend the process to anyone who has the time and space to commit to it.

*Farmington Hills, Michigan*

*Reprinted in part from the October/November 1997 issue of the newsletter of the Southeast Michigan Bromeliad Society.*

## A Word of Warning to New Members

Chet Blackburn

**I**t all starts out so innocently! You go to a nursery or chain store to pick up a few seedling tomato plants for your garden. Then you see "It."

More often than not, "It" is an *Aechmea fasciata*...that strange being that is both bizarre and beautiful at the same time. Its silvery banded foliage and huge bright rose-pink inflorescence peppered with baby blue flowers is quite unlike any other plant you'd ever seen before. You stop in your tracks. You cannot help but stare at it for a moment. That moment can become one of those defining moments of a lifetime. The less curious, but nonetheless wiser among us simply stare briefly and then move on, never aware of how close they had actually come.

Those with more curiosity than common sense however, pause long enough to ask the person behind the counter about "It." That worthy informs us that "It" is "a bromel-aid." When pressed further, he advises us that a bromel-aid is some kind of cactus or orchid, and that you're only supposed to put water in the center of the plant...never in the soil, or maybe you're only supposed to "mist it."

Unfortunately, since the Federal Drug Administration does not yet require a warning label on bromeliads advising of their addictive nature, you are blissfully unaware of the potential hazards to your financial health. You buy "It," and so begins your headlong plunge into the murky world of the bromeliad counterculture.

You soon will find that, like the potato chip that advertises, "Bet you can't eat just one!", *Aechmea fasciata* usually proves to be just the first in a long string of bromeliads encountered over the ensuing months that simply can't be resisted.

The addiction takes hold rapidly and somewhere around the third or fourth bromeliad, you are beyond rehabilitation. You not only have to have more and more bromeliads; you have to have them more and more frequently!

Then, you move on to the harder stuff...the stuff that isn't sold over the counter at nurseries and discount stores...the rare stuff found only through the mails from plant pushers in Florida and Southern California. At first, you have no idea what you are ordering; the description in the catalogue just sounds interesting! You start winding up with plants with strange sounding names like *Canistrum* and *Quesnelia*. However, as you become more sophisticated you actually begin to know what you want...and what you want is inevitably more expensive.

Your collection will continue to grow in direct proportion to your decline in social skills. You will no longer care about how your favorite sports teams are doing, what Madonna is up to, or which criminal was recently let off by a lame-brained jury. The scales of justice become less significant to you than the presence of scales on your *Vriesea hieroglyphica*. You can now recognize the difference between the several varieties of *Aechmea disticantha*, but you can no longer remember the name of your youngest child.

Up until now, you have been alone in your epiphytic affliction. Until now, your family and friends have regarded you as becoming increasingly weird, but nonetheless harmless. At some point though, you will eventually encounter another bromophile, and you will learn that there is a group in your town that meets clandestinely once a month to talk about nothing but bromeliads. That's when the real trouble begins. Up to that point, bromeliads had found their way into your home one or two at a time. You have been limited in your ability to acquire them by their relative unavailability coupled with your own financial constraints. Now, however, you become exposed to the world of free offsets and inexpensive plant tables. You carry them home by the armload!

Your family begins to realize—too late—that now that you have become part of an organization, you are no longer harmless. The windowsills and every nook and cranny of the house are saturated with bromeliads and the word "greenhouse" begins to crop up more and more frequently in conversations with your spouse, (as does the word "divorce.")

By now also, your spouse has noticed another strange phenomenon of the bromeliad counterculture. That is...while only a tiny percentage of the world's population even knows what a bromeliad is, there are more books about them than there are on world history, politics, and human behavior combined...and you have now embarked upon the path to own every one of them.

You are beyond redemption and you can bet your spouse will never send you out to buy another tomato plant again.

I thought it only fair to warn you.



## Contributions to the Society

The people and organizations below deserve the thanks of all BSI members. We would like to acknowledge their gifts and express our gratitude to them and the many others who have contributed to the society over the years beyond simply paying dues. Some have contributed additional funds to the JOURNAL color fund, some have contributed to the Mulford B. Foster Bromeliad Identification Center, some have donated memberships to friends or educational organizations, and some have made a donation to the BSI to use as it sees fit. Many of the people below make donations every year when they renew their annual subscription, and recently various speakers have been donating memberships to the BSI in lieu of receiving some or all of their speaker fees. Would that there be more of them.

### Organizational donations

Southwest Bromeliad Guild  
Bromeliad Society of Central Florida  
San Diego Bromeliad Society

### Individuals

Virginia Barthelemy	Thomas Lakers
Helen Camp	Gene McKenzie
Ramon Cantero	Sylvia Méluzin
Dennis & Linda Cathcart	Lee Miller
Dana Field	Joseph Myers
Roberta Fine	Bird Peddicord
Ben Franklin	Jerry Raack
Hitoshi Fujii	Rex Reike
Grace Goode	Helga Remy
Dale Kammerlohr	Frances Sanjuro
Leonard Kent	Carolyn & Ron Schoenau
Pamela Koide	Hiroiyuki Takizawa
James Jones	Darrel Wall
Ervin J. Wurthmann	

Checks or international money orders should be made payable to The Bromeliad Society International. They may be mailed to Membership Secretary Carolyn Schoenau, P.O. Box 12981, Gainesville, FL 32604 or to Editor Chet Blackburn, 720 Millertown Road, Auburn, CA 95603.

## Ritual Use of Bromeliads in the Maize Planting Ceremony of the Lenca of Honduras: Part II

Sylvia Méluzin<sup>1</sup>

Photographs by the Author

[The first part of this article appeared in the last issue of the JOURNAL (Vol. 47, No. 6)].

### TESTING THE HYPOTHESIS: A MAIZE PLANTING CEREMONY

Chapman (1985:109-111) had presented the essentials for a minimum ritual observance as:

1. offerings/payments of maize, cacao, and at times blood;
2. prayers giving thanks and requesting permission;
3. a prayer reciter or office-holder in addition to those interested;
4. a meal (in most rituals) as an act of devotion and usually of maize, chicha (a fermented drink made from maize), and sacrificed birds;
5. a blessed cross, copal (a plant resin used for incense), candles, and (in many rituals) *zomos* or flowers;
6. a location appropriate to the ritual's purpose.

An elaborate observance would involve:

1. a more precisely articulated format of prayers and events;
2. a second cross (to be left at the cessation of the ritual);
3. fireworks;
4. particular attention given to the arrangement of items in groups of nine;
5. music and dancing at the ritual's end.

That Saturday morning about 5 A.M., we met at the *cofradía* building in Yamaranguila to help transport people and paraphernalia to a cleared cornfield in Santa Cruz de Rosario. This hamlet is within the jurisdiction of Yamaranguila and is surrounded by pine forest at an elevation of around 5800-6000 feet. The stubble of last year's crop had been burned off to prepare the field for planting. An altar had already been erected by the time we arrived. It was on a north-south axis, so participants throughout most of the ritual faced east. It consisted of three posts stuck into the ground and tied to some horizontal poles. Also attached vertically were *pacaya* palm fronds (*Chamaedorea bifurcata*), chosen, it was said, because its fruit resembles the corn kernels on an ear of corn. While the various attendees were milling around, I was able to position myself about four feet away to observe, take photographs, and not be too obtrusive.

<sup>1</sup> Dept. of Anthropology, P.O. Box 6846, California State University, Fullerton, California 92834-6846



Figure 6.

On the right is the head of the *cofradía* in Yamaranguila, which is sponsoring the maize-planting ceremony. He is seen with a baton of office. In the middle, another *cofradía* official carries a large *zomo*, probably *Tillandsia excelsa*.



Figure 7.

Close-up view of the immature inflorescence of the very large *Tillandsia*. It was said to resemble a corn stalk with incipient corn-ears.



Figure 8.

The *Tillandsia* is in place on the altar upon which are also palm fronds and *Catopsis*. The kneeling *rezador* has already begun the prayers. He is holding a censer filled with copal. A lit candle has been put in the hole in front of the altar.



Figure 9.

Close-up view of one of the front row *zomos* (presumably *Catopsis*), although no cretaceous coating is seen. (Luther suggests they might be *tillandsias*.)



Events started moving rapidly. I realized I was behind a man who by his arm motions appeared to place eleven *zomos* on a crossbeam. So much for numerical significance I thought! However, my disappointment soon faded as I turned to see the twelfth *zomo* being brought forward. One of the *cofradía* officials, Pascual Rodríguez, carried a very large green-leafed *Tillandsia* (probably *T. excelsa*) which was then attached to a separate short pole stuck in the ground in front of the altar. (Interestingly, I was later told that eight, not eleven, *zomos* had been placed on the cross beam. This would have meant the large *Tillandsia* was the ninth, not twelfth, *zomo*. I was not about to dispute the point! Either way the number was symbolic.) Because of the basket of *Catopsis* viewed two days earlier, I assume the *zomos* on the crossbeam were *Catopsis*. None were in bloom, and their leaves tended to blend in with the fronds. The inflorescence on the large *Tillandsia* was not fully developed; in this stage it was described as representing a corn stalk with corn-ears.

Two holes had been dug, one in front of the altar, the other in back. (Chapman's diagram [1985] places two holes in front.) A lit candle was placed in the front hole, presumably to prevent its being blown out. At the foot of the altar in front were various essential items, such as corn to be planted, in addition to copal in its censer, extra copal, cups, chicha, bottle of rum (presumably), and fireworks attached to long slender sticks. The special cross from the *cofradía* was placed against the base of the altar. Two ceremonial staffs, also from the *cofradía*, were attached on their own separate poles in the ground in front. A turkey and two chickens were set apart. Near the top of the altar in front were bougainvillea and hibiscus flowers. Also near the altar top was placed the "crude cross" (i.e., crudely made of two pieces of wood spliced together).

Before the altar had been completely adorned, the *rezador* had already begun. He was kneeling, waving the copal censer side-to-side and/or front-to-back and/or up-and-down, while reciting various prayers and requests. (We were told the hope was that the corn would be green and healthy as the *zomos* were. One participant was of the opinion that there was a brotherhood between the *zomo* and corn; the corn flourishes and then dies, just like the *zomo*. This was presumably a comparison between the green sheaths, which then turn into dry husks, and the green *zomo*, which flowers and eventually dries up.) At one point, the *rezador* held the firecracker sticks and made the sign of the cross over the items as he prayed. Various attendees were to offer prayers. Fireworks were set off at what were deemed appropriate moments. Meanwhile cacao beans (neither twelve nor nine) were being roasted. (Cacao was the basis of a pre-Columbian drink that was used ritually as well as by the elite.) At the right side of the altar a woman was to grind the cacao which was then added to the chicha that apparently contained a bit of rum also. The drink was blessed by the *rezador* and then by the head of the *cofradía*. Prayers were offered. Chicha mix was then poured into the front *zomos* and into the front hole. This was followed by another fireworks display, peppered with "*Vivan los ángeles!*" The chicha mix was then poured into

cups and passed out to all those present. By then a second group of *Catopsis* was taken out of a bag and tied in two bunches to the back of the altar. As with the front row, the characteristic chalky powder was not apparent, but two *Catopsis* inflorescences were visible, identifying them as *C. morreniana*. (I was unable to ascertain whether nine or twelve were attached.)

Chapman had noted a distinction in the blood payment. The chicken blood intended for the angels was drained into the *zomos*, and the turkey blood for the earth spirits was spilled into one of two holes in the ground. In the *compostura* I witnessed, both chicken and turkey blood were directed into the back hole, while the chicha mix was poured into the front *zomos* and the front hole. The wooden spikes used to puncture the necks of the birds to obtain the blood were placed on the back of the altar. (Puncturing for blood sacrifice was a typical pre-Columbian trait.) A few feathers from the white chicken were placed in the large *Tillandsia zomo*. In addition, two white chicken feathers were given to the woman who had ground the cacao. Some feathers from the black chicken and the turkey were tucked into the eleven *zomos* on the front of the altar. Soon after the corn kernels had been blessed earlier in the ritual, some of the men started the planting. They made holes for the kernels with a digging stick, another pre-Columbian trait.

## CONCLUSION

In conclusion, I believe my hypothesis is correct, namely, bromeliads, usually *Catopsis* but at least one *Tillandsia*, are ritually important in the Lenca tradition because they resemble parts of the maize plant. The similarities seen with *Catopsis* include the sheath covering the ear of corn, the corn tassels, and the kernels. The immature inflorescence of *Tillandsia excelsa* recalls the entire plant stalk with incipient corn-ears. That they are epiphytic means that the bromeliads are viable even when removed from their habitat to be placed on an altar, and they remain so throughout the year even when fallen to the ground. Because they provided such a potent ritual item and because of their epiphytic nature, bromeliads other than maize-similar ones might also be selected for different *composturas*. (Their epiphytic quality means they are off to a good start as messengers!) Some *Catopsis* (e.g., *C. berteroniana*) will produce their inflorescence during the maize growing season. I believe this can be seen to link them more closely to fruition in the maize cycle, an example of the like-produces-like phenomenon. Finally, variations in the ritual were noted by Chapman and apparently still continue. Essential features persisting are maize symbolism with bromeliads, payment/sacrifice by blood, and ceremonial drink of chicha with cacao.

Chapman's government informant had incorrectly labeled the *zomos* as parasites. This is a common misconception throughout Latin America. I propose that it reflects the Hispanic perspective, which originated in temperate Europe where epiphytic plants do not occur. I do not believe the pre-Columbian inhabitants, living in warmer regions where epiphytes abound, would have



Figure 10.

The ritual drink of chicha is poured into the front *zomos*. The *rezador* momentarily holds the special *cofradía* cross to prevent its getting wet. The long slender sticks have fireworks attached at the ends.



Figure 11.

The back of the altar with the two bunches of *Catopsis*. Also seen are the back hole and the turkey that was sacrificed for its blood and will be used in the ritual meal.



Figure 12.

The *rezador*, holding one of the firework sticks, offers a prayer and with the firework stick will make the sign of the cross over the three sacrificed birds. On the upper altar is the crudely made cross. The *cofradía* cross with ribbons is at the foot of the altar. Also seen is a white sack with the corn to be blessed and then planted, a large jug of chicha, and the *mano* and *metate* for grinding the cacao that was added to the chicha.

assigned a parasitic nature to epiphytes simply because they were not growing in the ground. The pre-Columbian world view was a multifaceted one, with fluid boundaries, and thereby more accommodating to varied plant habitats.

#### ACKNOWLEDGEMENTS

I would like to extend my gratitude to the following: Anne Chapman for her very helpful discussion and references. The Instituto Hondureño de Antropología e Historia for allowing me to conduct my ethnobotanical research. The Instituto's representatives, Ildefonso Orellana (1990) and Emilio Aguilar Cáliz (1996), who were excellent liaisons with the various people involved with the *composturas*, and who were won over to my enthusiasm for the *zomos*. Harry Luther of the Marie Selby Botanical Gardens for the identification of bromeliads from both photographs and dried specimens, and especially all those Lenca in the Department of Intibucá who were gracious enough to share with me their appreciation of the *zomos*.

#### REFERENCE:

Chapman, A. 1985. *Los hijos del copal y la candela: ritos agrarios y tradición oral de los Lencas de Honduras*. Mexico City: Universidad Nacional Autónoma de México.

PO Box 6846  
California State University, Fullerton  
Fullerton, California 92834-6846



## Resolution of the SBBr Governing Board

Luiz Felipe N. de Carvalho and Elton M. C. Leme

The Sociedade Brasileira de Bromélias (Brazilian Bromeliad Society) is essentially a conservation organization. It has provided support for many foreign scientists who have cooperated with Brazilian investigators and scientific agencies to advance our knowledge of Brazilian flora.

The Convention on Biodiversity prohibits all commercial collecting and extractivist activities. It also places a number of restrictions on collecting for research and scientific ends.

Although habitat destruction is a reality in Neotropical countries, the acceleration of this destruction by either collecting or extractivist activities is inexcusable.

The SBBr Governing Board advises its members that Brazilian environmental laws must be strictly obeyed by all; a member who disregards these laws, besides being prosecuted the Brazilian legal system, will be duly warned and expelled from the Society.

*Rio de Janeiro  
November 10, 1997*

---

## New Telephone Area Code

Even the rural parts of northern California are no longer exempt from telephone area codes changes wrought by the telecommunications revolution. The old area code of 916 has been split into two area codes, 916 and 530. Those of us in the more rural parts of the old 916 area code have been evicted and unceremoniously dumped into the new 530 code. The change will effect very few BSI members because Sacramento will remain in the old 916 code. However, effective immediately, the telephone number and fax for the editor of the JOURNAL BROMELIAD SOCIETY will be: 530-8851-0201.

---

## Hilda Rauh

Hilda Rauh, wife and collecting companion of Doctor Werner Rauh, passed away on September 10, 1997. The Bromeliad Society International offers it profound condolences to Doctor Rauh on his, and our, loss.

## Howdy Partner!

Allyn Pearlman

No where else but Houston,...armadillos, Texas two-step, Cotton-eyed Joe, miles and miles of freeways, blue jeans, oil wells, and outstanding professional sports teams such as the Houston Astros, Houston Rockets, Houston Comets, and Houston Hotshots.

Yee Haw! Can you imagine all this and the 13th World Bromeliad Conference? If you attended our last World Bromeliad Conference, "Bromeliads in Space", you won't want to miss this one, the "Bromeliad Roundup." You will be staying at the same ranch (Wyndham Greenspoint Hotel) and you can't imagine the southern hospitality waiting for you there! You can bring your Sunday go-to-church duds for the Saturday night jamboree, but denim, calico and boots would be more appropriate. Remember, we are "deep in the heart of Texas!"

If you want a little culture in your life, visit Houston's museum district. Browse at the Menil Museum, Museum of Modern Art, Fine Arts Museum and Museum of Natural Science. Located in the same building as the MNS is IMAX Theater and the Cockrell Butterfly Center. See bromeliads, orchids, and other exotic plants while butterflies flutter around you. Wear something bright red and colorful and one just might land on you. Hermann Park, the Houston Zoo and the Japanese Garden are all within walking distance of the museums. This area is a must for all who visit Houston!

If you want to venture a little further from the ranch, you can travel south to the "beach within reach", Galveston Island, less than 60 miles away. Swim, sun, or shop on the strand, tour the 1894 Opera House, see the train museum, Moody Gardens (with a large pyramid greenhouse), the Bishop's Palace (unique turn-of-the-century architecture) and chow down on fresh gulf seafood. On your way to Galveston, leave enough time to stop by and tour NASA. You may want to take an entire day to visit NASA and Space Center Houston. If you bring your children, they just may want to also go and see an Astros baseball game, visit Six Flags Astroworld Amusement Park, or play at Water World.

Just 90 miles to the east is Beaumont, Texas, home of spindletop, the first oil well in Texas and the Warren Loose Conservatory. You need to see this newly completed monument to the late Warren Loose. 200 miles to the west will take you to the world famous Alamo. See Texas history at its best! If you want dining and shopping, take the San Antonio River Walk. Visit the many missions in and around the San Antonio area and Fiesta Texas.

If you feel lucky, you can go to the dogs or the horses (Gulf Greyhound Park, also on the way to and from Galveston, or Sam Houston Race Park.) If you

want to pull the handles of one-armed bandits, you can reach them in Lake Charles, Louisiana, just about 2 hours away.

If you want lots of shopping, you can shop until you drop at the Galleria. Three levels of shopping with hundreds of stores, with an ice skating rink in the middle. If food is your passion, Houston is a multicultural city and ethnic restaurants abound.

Y'all come!

*Houston, Texas*

## A Moment of Magic

Keith Golinski

Sometime in 1989 or 1990, I bought my first *Orthophytum gurkenii* from Grace Goode, who had grown several plants from seed that she had received from the United States. After flowering the plant, I collected seed from it that produced several hundred young plants.

To my surprise, when the plants were reaching about one inch in size, one plant in the batch showed some variegation. I watched the plant and nursed it carefully, and as it grew larger, the white stripes turned to a deep pink.

The variegation was quite unusual. The plant had the typical silvery banding common to the species on top of the leaf, which between the bands was transparent. The bottom of the leaf was pinkish-red, including about an eighth of an inch of clear gel similar to that of an aloe plant. The resulting three dimensional quality was both odd and beautiful. As the plant matured and flowered, the stripes in the upper part of the plant, including the flower rosettes, turned white on green.

The plant produced several pups, only one of which was variegated, although the variegation on that one was even better than on the original plant. After this plant flowered, it produced several offsets.

However, as quickly as this beautiful moment of magic was given to me, it was taken away. None of the pups has come back with the same variegation again, although several of them still have pink edges.

Alas, a sad loss, but nevertheless a rewarding experience.

*"Yurara", Hunchy Rd., Palmwoods  
Queensland, Australia, 4555*



Figure 13.  
Top view of variegated *Orthophytum gurkenii*



Figure 14.  
Underside of variegated *Orthophytum gurkenii*

## Recent Contributions to the BSI

Jerry Raack<sup>1</sup>

Recently we have had a number of sizeable donations to the BSI. Some were recognized in the last issue of the JOURNAL. The latest is from the Southwest Bromeliad Guild and is the largest to date, a sum of \$1,500. Other funds have come in from private donors and are just as valuable and of similar relative size due to their single source. All of these donations are greatly appreciated and badly needed by the BSI. For the past few years, the BSI has spent more money in running the society than it has taken in. This was due to a reduction in membership over the past few years, while our expenses stayed relatively flat. Why did the expenses stay flat when membership declined? Because the cost to print the JOURNAL and to maintain memberships stays at a certain minimum regardless of the number of members, then increases only very slowly as members are added. Postage is charged at our cost, so reducing the number of JOURNALS sent does not save us money either.

So, the long-term key to having sufficient income is to increase our membership. An increasing membership also keeps the organization more viable. We succeed only through our members. Each and every one of you is valuable to us as a successful society. If you are borrowing a copy of this JOURNAL from a friend to read, please consider joining the BSI as a voting member and receive your own copy of the JOURNAL in return. This will help guarantee that the society remains viable and that we all continue to be recipients of its benefits.

I welcome and thank all of you who have recently joined. I also thank all of you who have worked extra hard recently to make your neighbors and friends aware of the BSI and its importance which has contributed to a recent increase in our membership. I further thank everyone who has donated additional funds to the BSI to help restore our coffers and assure we can continue the important work of the BSI. We hope private and corporate donations will continue to be received.

If anyone has suggestions on items they would like to have the BSI address, or for topics to be addressed via JOURNAL articles, please write to any director or officer in the society (addresses are on the inside back cover), and let us know of your concerns or ideas.

Pataskala, Ohio

<sup>1</sup> President of the Bromeliad Society International

## Cultivar Registration Update

Ellen Baskerville

The following fourteen registered cultivars have been added to the all-inclusive listing of cultivars available through BSI Publications.<sup>1</sup> An updated, all-inclusive listing (June 1991–May 1997) is available from BSI Publications. Work on the Bromeliad Cultivar Registry is ongoing, and I ask that you continue to send in your registrations, slides and photographs, and other important information so that it may be included in the registry. The slides or photographs may be used in the JOURNAL, and it is important that they be of good quality and that they show the best features of the plant against an uncluttered background. Although a slide is preferable, a good quality photograph or negative is also acceptable.

Genus Name	Cult/ Grex	Collector/ Hybridizer	Parentage
<b><i>Billbergia</i></b>			
<i>Bi.</i> 'Cold Fusion' 7-24-96	C	Jim Irvin	<i>vittata</i> 'Domingo Martins' x <i>leptopoda</i> (figure 15)
<i>Bi.</i> 'Delicioso' 5-31-97	C	Don Beadle	'Caramba' X 'De Nada Rojo' (#1236)
<i>Bi.</i> 'Flamenco' 5-31-97	C	Don Beadle	<i>amoena</i> 'Ed McWilliams' X 'Baton Rouge' (#1150)
<i>Bi.</i> 'Formidable' 5-31-97	C	Don Beadle	<i>amoena</i> 'R.L. Frasier' X <i>rosea</i> (#1094)
<i>Bi.</i> 'Lambada' 5-31-97	C	Don Beadle	( <i>distachia</i> v. <i>straussiana</i> x <i>horrida</i> v. <i>tigrina</i> ) X <i>amoena</i> 'Beryl Allen' (#932)
<i>Bi.</i> 'La Mesa' 5-31-97	C	Don Beadle	<i>distachia</i> v. <i>straussiana</i> X Gerda (115) T. O'Reilly*
<b><i>Cryptanthus</i></b>			
<i>Cr.</i> 'Red Baron' 8-96	C	C. Richtmyer	'Tsunami' X 'Candy Apple' (Crypt. Soc. J.; 11(3):18)
<i>Cr.</i> 'Steven' 8-96	C	C. Richtmyer	<i>sinuosus</i> 'High 'N Mighty' X 'Hawaiian Beauty' (Crypt. Soc. J.; 11(3):18)

<sup>1</sup> BSI Publications, c/o Sally Thompson, 29275 N.E. Putnam Raod, Newberg, OR 97132. E-mail@juno.com





Figure 15.

*Billbergia* 'Cold Fusion'. Hybrid between *B. vittata* 'Domingo Martins' and *leptopoda* registered by Jim Irvin



Figure 16.

*Neoregelia* 'Tuti Fruiti', a sport of *N. 'Scarlet Fever'* registered by Sam Smith



Figure 17.

*Pitcairnia* 'Hattie', hybridized and registered by Sam Smith in honor of his wife Hattie.



Figure 18.

*Tillandsia* 'Padre', a cross made between *T. roland-gosselinii* and *T. chiapensis* by Bob Spivey.



## Neoregelia

Ne. 'Kathleen' 2-26-97	C	Grant Groves David Meade*	['Dark Red' X ( <i>coriacea</i> x Meyendorffii)] X X [( <i>coriacea</i> x Meyendorffii) X 'Violet']
Ne. 'Trey' 3-11-97	C	Bob Spivey	'Aztec' X 'Red Dot'
Ne. 'Tuti Fruiti' 12-10-96	C	Sam Smith*	sport of 'Scarlet Fever', an Oesser hybrid (figure 16)

## Pitcairnia

Pi. 'Hattie' 12-10-96	C	Sam Smith	'Beaujolais' X <i>smithiorum</i> (figure 17)
--------------------------	---	-----------	---

## Tillandsia

Ti. 'Padre' 31-12-97	C	Bob Spivey	<i>roland-gosselinii</i> X <i>chiapensis</i> (figure 18)
-------------------------	---	------------	---

## X Vriecantarea [*Vriesea* X *Alcantarea*]

Vc. 'Inferno' 2-4-91	C	John Arden	<i>Vr. ensiformis</i> X <i>Al. Regina</i>
-------------------------	---	------------	---

\* Indicates the namer/hybridizer of the plant as opposed to the hybridizer.

X Vriecantarea 'Inferno' was previously registered in 1991 as *Vriesea* 'Inferno.' The reclassification of some of the *Vriesea* to the genus *Alcantarea* (including *Vriesea regina*) and the bigeneric name, X Vriecantarea proposed by Jason Grant in 1995, presented the question of what to do with *Vriesea* 'Inferno.' It is John Arden's wish that his hybrid agree with the change from *Vriesea* to X Vriecantarea. See PHYTOLOGIA September 1995, Volume 79(3):254-246 for additional information.

Note also: Since plants formerly placed in the genus *Streptocalyx* have been reclassified and placed in the genus *Aechmea*, the bigeneric X Streptolarium should be changed to X Nidumea. All X Streptomea bigenerics are now known as *Aechmea* hybrids.

NOTES: The parentheses enclose the cross of one of the parents of the cultivar. In complex hybrids, brackets enclose the cross of one of the parents of the cultivar when there are more than two plants involved in that parental cross. That parental cross is indicated by a lower case "x". The upper case "X" indicates the major cross between the parents of the cultivar. Single quotes indicate a cultivar name. There are no quotes around the name for a *grex*. A number following the formula for a cross indicates the hybridizer's identifying number assigned to that cross.

## Ortgiesia: A Subgenus of *Aechmea*

Peter Franklin and Derek Butcher

The name *Ortgiesia* was first used by Regel in 1867 to cover his *Ortgiesia tillandsioides*, which we now know as *Aechmea recurvata*. The word *Ortgiesia* was derived from the name of a Spanish botanist but one wonders what Regel thought a *Tillandsia* looked like, because the literal meaning of the species "*tillandsioides*" is "resembling a *Tillandsia*." Since then, the name *Ortgiesia* has been on the lips of many botanists. Recently we saw it resurrected to genus status, but only for a short time. The genus *Aechmea* is the dumping ground for many of the odd-bod species in subfamily Bromelioideae but we believe that the species in the subgenus *Ortgiesia* are sufficiently distinct from the other odd-bods to be treated at generic status. However, we ain't botanists.

In South Australia, *Ortgiesia* is not a strange word and is used quite frequently. This plant group has its origins in Santa Catarina, a state in Brazil located just south of Rio de Janeiro. Santa Catarina is on roughly the same latitude as the southeastern part of Queensland and northern New South Wales in Australia. It has a similar climate with both rainfall and temperatures occurring in a pattern similar to that of Australia's east coast. It is no wonder that this group of plants likes growing here in Australia, and does not particularly mind our cool winters. They are popular with beginners and connoisseurs alike.

While it is easy to recognize a plant in the *Ortgiesia* group in general, it is not so easy to recognize all the individual species. Lyman Smith was renowned for his ability to recognize species from dried herbarium materials. His monograph is based primarily on herbarium specimens. It is most curious, therefore, that his key for *Ortgiesia* is based on petal color, a trait that tends to fade in herbarium material. This suggests that even he found it difficult to separate the different species using his normal techniques.

Over the years, we have collected and flowered many plants from this group and are forever asking each other's opinion as to names. We have even tried to get experts overseas to investigate, but to no avail. When that happens, you do it yourself.

Peter is intimately involved with the workings of computers and at the Adelaide Conference in 1995, gave some ideas on how to use a personal computer in conjunction with our hobby. We have been doing more in-depth work in trying to get the computer to help us better understand the relationships and differences of the various species. Peter was able to acquire information about a computer system called Delta, which was written by researchers in the CSIRO Division of Entomology. It is a system which enables descriptions to be coded into a standard format and then to be further processed by a computer. Its functions include the generation of keys and the ability to highlight differences

between the species amongst many other things, so it looks as though it might be quite useful. We also found that Eric Gouda, Curator at the Utrecht (Holland) University Botanic Gardens, a botanist with an interest in bromeliads, was using Delta so Derek has been busy coding up some data in Delta format for Eric - and getting some results.

What have we found? Well, nothing much at the moment...but the answer is potentially just around the corner. It did help us to decide to include one species in *Ortgiesia* and to exclude others. It also showed us that computer experts need to know more about botany and that botanists need to know more about the advantages and constraints of computers. Every botanist and keen bromeliad grower who has access to a computer of any sort seems to be setting up his or her own system without references to others. This means that as these systems develop they may grow further and further apart. This human frailty has been known for several thousand years and is mentioned in the Bible as the "Tower of Babel." Perhaps with encouragement we can reverse this trend because the computer is ideal for comparing things - provided you are comparing apples with apples. If done properly, the standard approach to taxonomic information storage, such as that provided by Delta, is the way to go.

Delta has been adopted by the International Taxonomic Databases Working Group as a standard for data exchange. Even so, a considerable amount of work remains to be done if the bromeliad community is to agree on the set of characters and values needed to describe bromeliads. But that is another story!

Written descriptions and authenticated photographs do help in linking a plant to a name but it is difficult to decide what is a species and what is a hybrid. We have great fun trying to catch each other out with names and we have great difficulty in proving the pedigree of the specimens. We even try to establish pedigree by growing on from self-set seed. Moreover, there are so many questions.

- Where did the plant come from?
- Are the plants known by the same name in different parts of the world actually the same plant?
- Is it a recently imported plant?
- Was it grown from seed?
- Where did the seed come from...from the wild or from a collection? Was it collected personally or sent from the BSI or the BSA seed bank?
- Does this group hybridize easily or does it usually need human intervention?
- Why do so many of the supposed hybrids set their own seed?
- Are the species presently described authentic species or are they too of hybrid origin (natural hybrids)?
- Why are there so many *Ortgiesia* plants in our collections that are unnamed?

- Why are there so many plants that nearly, but not quite, fit the official descriptions?
- Are some of the unnamed or misnamed plants that we currently grow really a good species?
- Why are there so many variegated plants in this group?

The various species seem to fit into four general categories:

Group 1 possesses triangular, stiff, and erect leaves. These include:

- *guaratubensis* Described by Pereira in 1972. Not known in Australian collections.
- *kleinii*
- *pimenti-velosoi*,  
*pimenti-velosoi* var. *glabra*
- *recurvata* There are many hybrids masquerading under this name.  
*recurvata* var. *ortgiesii*  
*recurvata* var. *benrathi*
- *seideliana*

Group 2 has ligulate (strap-shaped) and leathery leaves.:

a. Inflorescence simple and dense heading:

- *alegrensis* collected by Seidel and described by Weber in 1986. A plant by this name is grown in a few collections here in Australia but doesn't seem to flower
- *blumenavii* no mature specimens seen, but there has been seed available from the BSI seed bank labelled as *A. blumenavii*. It remains to be seen what these seeds grow into.  
*blumenavii* var. *alba*
- *calyculata* This is common around Newcastle and is a shy bloomer. It is more common around Adelaide.
- *comata* The plant was known as *A. lindenii* in Smith and Downs, but the *comata* name has made a comeback more recently. There is a form with red scape bracts and another with papery scape bracts.  
*comata* var. *makoyana* (syn. *lindenii* var. *makoyana*)
- *cylindrata*

b. Inflorescence simple and lax, including:

- *apocalyptic* The variegated form is known as *A. 'Helen Dexter'*.
- *gamosepala*  
*gamosepala* var. *nivea*
- *kertesziae*  
*kertesziae* var. *viridiaurata*
- *leppardii* Many growers have not heard of this one, but may have it. It was recently named by a Kew Gardens botanist 20 years after it bloomed at Kew.

c. Inflorescence branched, at least at the base, including:

- *candida* Named because of its white petals. Can have a compound and simple inflorescence on the same plant.
- *caudata*
  - caudata* f. *albiflora*
  - caudata* var. *variegata*
  - caudata* var. *eiperii*
- *coelestis* So named because of its sky-blue petals. It looks different from all others in the subgenus because it has that hairy look. Maurice Kellett in Melbourne wants to grow this species by the thousands to compete with the blueberry trade. He maintains that its fruit is superior in taste.
  - coelestis* var. *albomarginata*
  - coelestis* var. *acutifolia*
- *gracilis* This is a small version of *A. organensis* according to Harry Luther and we do find plants that are intermediate in size.
- *organensis*
- *winkleri*

Variegation within this subgenus is very prevalent indeed. There are a number of species that have their variegated brethren officially described (*caudata*, *coelestis*, *comata*, and *kertesziae*) and there are many others that have variegated cultivars. As far as we can determine, here in Australia there are variegated forms of *pimenti-velosoi*, *recurvata*, *comata* (2 forms), *cylindrata* (2 forms), *apocalyptica*, *gamosepala* (2 forms), *kertesziae*, *caudata* (2 forms), and *coelestis*. The propensity for variegation also extends to *Orgiesia* hybrids with variegated plants of 'Pie in the Sky', (often labeled as *A. pimenti-velosoi* *variegata*) and 'Julian Nally.'

Fulham, South Australia

[This is a condensed version of notes from a continuing project by Peter Franklin and Derek Butcher. The presentation is usually given in the form of a slide program, complete with slides depicting the characteristics of the group and the individual species, as well as showing slides of variant forms of some of the species and slides of "imposters in collections posing as these species."]

## Guzmania monostachia seed needed

Dr. Helenice Mercier from the Department of Botany, University of São Paulo, C.P. 11461 - CEP 05422-970, São Paulo, SP - BRASIL, is asking for seed of *Guzmania monostachia* to be used in experiments in physiology. Growers who have seed of that species can send them to the address above. For additional information you she can be contacted at her e-mail address, hmercier@usp.br

## BOOK REVIEW

Tom Lineham

### *Canistrum; Bromeliads of the Atlantic Forest*, by Elton M.C. Leme.

Published by Salamandra Consultoria Editorial Ltda., Rio de Janeiro, RJ, Brazil, 1997. 30 x 24 cm (12 x 9 in.), hardbound, 107 pages, 63 illustrations in color including 16 full-page, 19 black and white photographs, drawings, maps, bibliography, index. ISBN 85-281-0202-5. For information about how to order, see below.

Elton Leme's reputation as a taxonomist is widely recognized as the result of his publications and lectures. His articles have appeared frequently in this journal; he was a founder of the Sociedade Brasileira de Bromélias and has edited its quarterly from the first issue. He and Luiz Claudio Marigo published the well-received *Bromeliads in the Brazilian Wilderness* in 1993.

A continuing theme in Sr. Leme's work is conservation. He repeatedly urges, both as a botanist and as a jurist, the need for action to preserve natural resources. An interesting aspect of this book is the foreword by the president of GPC, a large Brazilian conglomerate, whose organization underwrote the cost of publication, expressing hope that this book will promote awareness of the need for conservation.

In this introduction, the author in describing his approach to plant classification explains the need for having live specimens and asserts that systematic botany is "a basic instrument for preservation." He emphasizes that the aim of this book is "to know to preserve."

The author is concerned that the bromeliad classification system as developed and interpreted over the past nearly two hundred years has allowed species to become identified with genera to which there is little affinity. He recognizes that the results were well intended but have been the cause of piecemeal reclassification without identifying effective corrections.

Sr. Leme began his overall study more than 10 years ago. It has involved only the so-called nidularioid-complex (*Nidularium*, *Wittrockia*, *Canistrum*, and part of *Neoregelia* genera) because of the initial direction. Within that scope, he has avoided the constrictions of the old classification system and has examined quantities of living plants for characteristics lacking in herbarium materials as well as those specimens. G.K. Brown, professor of botany at the University of Wyoming, and a member of the JOURNAL editorial advisory committee, says that in the process of this study Sr. Leme has produced "a modern synthetic revision of the genus *Nidularium*."

The manuscript became so voluminous that the author decided to divide it into three parts and to publish first his studies of the species least directly

involved with the genus *Nidularium*. He says, "I'm beginning from the end just due to cost conveniences." Therefore, he has gathered in this volume his arguments and findings that persuaded him to set aside these species from the core of his study.

This volume begins with a long introduction discussing the history of the old classification system, its shortcomings, and the author's reasons for making changes. In the successive five chapters, he presents for each genus or species a brief history, etymology, discussion of his reasoning and conclusions, distribution and habitat, revised identification key, and detailed discussion of the associated species.

In chapters 2, 3, and 4 he makes major revisions to *Canistrum* and *Wittrockia*, and creates a new genus, *Edmundoa*, "to bring together three species that have no close affinity with the genera in which they have been included up to now." Notable among these is *Edmundoa lindenii* (from *Canistrum*) with its varieties.

Chapter 5 includes changes involving the former *Wittrockia echinata*, *Nidularium weberi*, *Wittrockia paradoxa*, all reassigned to *Aechmea*, and associated with *Aechmea mollis*.

Chapter 6 reviews *Hylaeaicum*, the Amazonian subgenus of *Neoregelia* and provides a lengthy list of the characteristics that distinguish that new genus from the true *Neoregelia species*.

This is a beautifully designed and illustrated book that uses the latest computer techniques in page layout giving it a very modern look. The illustrated dust jacket (with a portrait of the author) enhances the overall appearance. The manufacture, including the binding, is superior.

Professor Brown has rated this book "the single most significant contribution to Brazilian Bromeliaceae taxonomy since Lyman B. Smith's Bromeliaceae of Brazil, published in 1955."

This work, even as the advance guard of a much more extensive study, is bound to create thoughtful and creative discussion. I recommend it highly for scientific libraries, bromeliad society libraries, and for individual researchers. The illustrations will please discerning amateur bromeliad collectors.

**TO ORDER:** For Brazil only: The Portuguese-language edition is available from the publisher. The English-language edition may be ordered from Sociedade Brasileira de Bromelias, Caixa Postal 71034 RJ CEP: 21015-970, Fax (021) 447-7700, Rio de Janeiro, RJ, Brazil; e-mail: bromelia@easyline.com.br. Price is US\$ 65.00 plus airmail charges: (to North America US\$ 30.00, to Europe US\$ 33.00, to South America US\$ 24.00, to Australia and New Zealand US\$37.00.) Dennis Cathcart at Tropiflora Nursery, Sarasota, FL expects to receive a supply of the English-language edition for sale. His advertisement for the book appears in this issue of the JOURNAL...TUL

## Welcome New Members

We are very pleased to welcome the following new members and /or welcome back a few former members returning to the fold after a lapse in membership. The following people have joined the BSI between July and November, 1997.

### Individuals

Ruby Adams	Doug Ellis	Richard Korby	Patti Pantone
Alice Alexander	Tamir M. Ellis	Grace Kostel	Kathleen Pavlick
Amy Anderson	Cathy Ensinger	Clara Kouchalakos	David Todd Pearson
Martha Anderson	William Eubanks	Jan Kramer	Jean Pipola
Danilo Aquino	Mark Evans	Tom La Haye	"Plants in Design, Inc."
Jean Argentieri	Mike Field	Bill Laney	Geri Prall
C. Armatas	Walter Fleming Jr.	Eileen Laird	Larry Reece
Elizabeth Athy	Fabian Font	Jane Latta	Perry Rhodes
Penny Ausburn	Neil Ford	Juan D. Laulhe	Alayne Richards
Reginald Baiao	Jo Ann Forman	Wendy Lee	Gary Richmond
Janet Bankhead	Benjamin Franklin	Molly Ann Lesnick	Peter Robinson
Ann Baran	Albert M. Frint	Nancy Lester	A. Ross, Esq.
Elaine Bassett	Virginia Gage	Dr. Robert Levine	Vitis Schlickmann Roetger
Robin Blaine	George Gause Jr.	Robert Licht	Patsy Schmidt
Lynn Bock	Jonathan Gilson	Jeff Lindberg	Gary Schneider
David Booth	Mariette Glover	David Lock	Vance Secheiski
Bob Branch	Augusto Luiz Gonzaga	Richard Loyd Jr.	Jan Scott
Irwin Brodsky	Martha Goode	Bob & Janice Lucas	Don Shaffer
Jayne Brogan	Lucille Goodwin	Celestine Luke	William Shidal
Lolita Brooks	Pamela Gordon	Bub Lura	Stacy Spackman
Mack Brown	Shirley Grego	Roane Mac Murtrie	Robert Sparrow
Jennifer Buckley	Ross Griffith	Michael Mackay	Nancy Spitz
Bill Burdette	Luis Gurken	Patty E. Magee	David Stafford
Robert Buss	Herb Hagenwald	Dr. Richard P. Mankin	Linda Stefanosky
William G. Cain IV	Jacklyn Haines	Pablo Marano	Marie Steffan
Barbara Carlough	Deborah Harper	V.G. Marshall	Charles Stickels
Mary Carnagio	Lynn Harper	Beaumont & Faye Martin	Joseph Strong
Julio Carrion	Joan Hayes	Linda McDole	James Swigert
Toni Carroll	Kathleen Hayslip	John McGrath	John Terrell
Clinton Carson	Clayton Headley	Kathleen McGregor	Sandy Toney
Barbara Chickowski	George Henry	Scott McKnight	Charlotte Teng
Karen Chin	Carolyn Hill	John McNichols	Karma Trease
Fred Clark	Christopher Hill	Maguiel Monell	"Unica Flora, Inc."
Vincent Coppola	Kathy Hodges	Kathi Monicatti	Eulala Vanover
Todd Cornwell	Mike Horwitz	Darlene Morris	Ed Voelker
Charlotte M Cranberg	David Hoyt	Bonnie Morteo	James Walker
Faye Cranberry	Peter Huddy	Kyla Nelson	Paton White
Armando Cruz	Brian Hunt	Donald Newenhouse	Raymond Wiggers
Maurice De Profit	Bobby Jackson	Hamilton Newson	Rodney Wilkerson
Oren Dinkel	G. Johnson	Gary Nicholas	Jane Williams
John Dinwiddie	John Johnston	Fred Nutter	William Wilson
Margaret Anne Dix	E. Jones	Andrew Nyman	Mark Willuhn
Sara Donayre	Bill Judge	Danielle Okin	Chokei Yoshida
Sharon Dryer	Diane L. Kaplan	Jack Orner	Carole Zimmerman
Jim Dufour	Rosemary Karpinski	Anna Osiecka	Rolfe Zornig
Betty Duterte	Alice Katchuk	Dr. & Mrs. Reynaldo	
Jack Dyer	Tom Knapik	Palines	

### Institutions

Botanical Research Institute	University of Hawaii Library
Quail Botanical Gardens	Deutsche Zentralbibliothek fuer
Singapore Botanical Gardens	Landbauwissenschaften



Advertising space in the *Journal of the Bromeliad Society* is available at the following rates:

	Rates <sup>1</sup>	One Issue	Six Issues
ALL ADVERTISING	Full Pages	\$125.00	\$625.00 <sup>2</sup>
PREPAID.	1/2 Page	70.00	350.00 <sup>2</sup>
Advertisers to provide any art work desired.	1/4 Page	45.00	220.00 <sup>2</sup>
	1/8 Page	25.00	125.00 <sup>2</sup>

<sup>1</sup> Cost for color ad furnished on request. <sup>2</sup> Plus \$25.00 per ad change.

Advertising is presented as a service to our membership and does not necessarily imply endorsement of the product. Please address all correspondence to: Editor—Chet Blackburn, 720 Millertown Road, Auburn, CA 95603.



## Bird Rock Tropicals

Specializing in Tillandsias

6523 EL CAMINO REAL  
CARLSBAD, CA 92009

TEL.: 619-438-9393

FAX: 619-438-1316

Send SASE for price list

Bromeliad Society, Inc.

**SEEDS**

**For Sale or Trade**

HARVEY C. BELTZ, SEED FUND CHAIRMAN  
6327 South Inwood Road  
Shreveport, LA 71119-7260

Send stamped, self-addressed envelope  
for listing of available seeds.

**WANTED**

***Aechmea tomentosa***

John Anderson  
Epiphitmy Extension Station  
P.O. Box 5202  
Corpus Christi, TX 78465-5202

## Michael's Bromeliads

Providing an outstanding selection  
of quality Bromeliads for the  
collector. Send stamp for *free* catalogue  
of nearly **1,000** species and cultivars.

Specializing in Neoregelias;  
from the early rarely seen hybrids,  
to the latest releases.

Mail order, or by appointment.

Michael H. Kiehl  
1365 Canterbury Rd. N.  
St. Petersburg, FL 33710  
Phone: (813) 347-0349  
Fax: (813) 347-4273

**Shipping Worldwide since 1986**

Florida Nursery no. 47217229



***It's  
Here  
at  
Last!***

**CANISTRUM - Bromeliads of the Atlantic Forest,**

by Elton M.C. Leme. A large format, very colorful book with excellent photos, most taken in habitat, is the first part of the long awaited revision of the genus *Nidularium*. This volume covers *Canistrum*, the new genus *Edmundoa*, *Wittrockia*, and the *Hylaeicum* subgenus of *Neoregelia*.

This is an extremely limited edition. Only a relative few copies of this excellent, fascinating and colorful work have been produced in English. Available in the US exclusively from **Tropiflora**. **\$85.00 postpaid in the U.S. and its territories.** (Short discount available for BSI affiliate club group orders.) Don't miss out! Call for your copy today.

**1-800-613-7520** (All major credit cards accepted.)

## THE BROMELIAD SOCIETY INTERNATIONAL PUBLICATIONS

BSI JOURNALS	Volumes for 1976 through 1989
	U.S. addresses \$13.00 for each volume
	All other addresses \$14.00 for each volume
	Three or more volumes \$10.00 for each volume (to any address)
	Volumes for 1990 through current issues
	U.S. addresses \$20.00 for each volume
	All other addresses \$25.00 for each volume

BSI JOURNAL BINDERS (each binder holds 2 years of the Journal)

1 to 4 binders	\$8.25 each
5 to 9 binders	\$6.60 each
10 or more	\$6.40 each

PRICES INCLUDE POSTAGE, CHEAPEST RATE.

PLEASE MAKE CHECKS OUT TO THE **BROMELIAD SOCIETY INTERNATIONAL** AND SEND TO:

BSI PUBLICATIONS, SALLY THOMPSON  
29275 NE PUTNAM RD.  
NEWBERG, OR 97132  
e-mail: mgtsat@juno.com



## BROMELIAD ROUNDUP

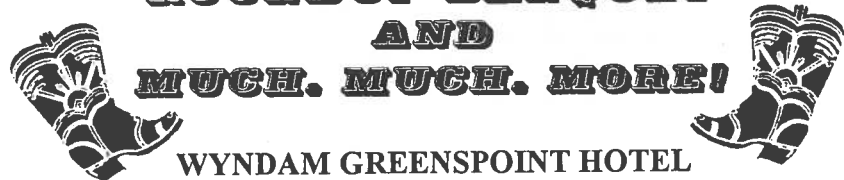
13th World Conference  
Houston, Texas July 1-5, 1998

### COME JOIN THE FUN!

ROUND UP YOUR FAVORITE BROMELIADS  
ROUND UP YOUR FAVORITE ACTIVITIES

- Plants
- Accessories
- Seminars
- Home Garden Tours
- Auctions
- Raffles
- Moody Gardens – Galveston
- 3-D Imax Theatre – Galveston
- Cockrell Butterfly Center – Houston
- Natural Science Museum – Houston
- Imax Theatre – Houston
- NASA/Space Center Tours

### ROUNDUP BANQUET AND MUCH. MUCH. MORE!



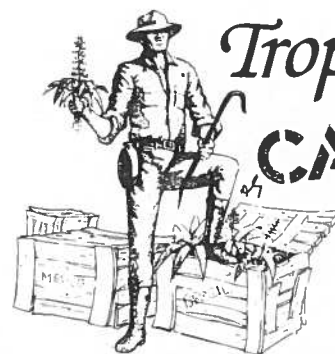
WYNDAM GREENSPPOINT HOTEL

Make your reservations today!

For more information and registration contact:

Betty Garrison (281) 358-2641 FAX (281) 359-1446

e-mail: don\_betty@nhmccd.campus.mci.net



## Tropiflora's CARGO REPORT

*It's not just a catalog,  
It's an adventure!*

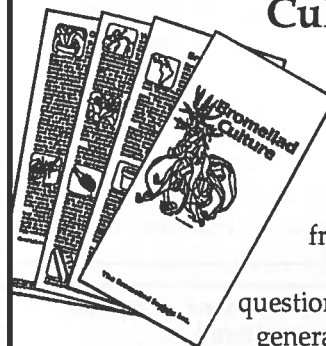
- ★ Catering to the collector with a fantastic variety of rare and unusual bromeliads as well as other unusual and exotic plants from the world over.
- ★ The best source for the professional with acres of stock under cover for instant service.
- ★ Information packed, with cultural tips, nomenclature updates, travel tips, collecting adventures and much more!

*Tropiflora*

Six issues per year. Free trial subscription to BSI members.

**Tropiflora** • 3530 Tallevast Rd. Sarasota, FL 34243  
Visitors welcome 8 til 5 Mon. to Fri. and until noon Sat.

### Bromeliad Cultural Tips



Answers  
the most  
frequently  
asked  
questions by the  
general public.

Hand out at shows,  
displays and sales.

8-fold, self-mailer. \$3.50 per hundred.  
Postage will be billed.

Order early from:  
Bromeliad Society, Inc.

P.O. Box 12981 • Gainesville, FL 32604

### BROMELIACEAE OF VENEZUELA

- 10½ × 9¼" hardbound
- 397 pages • 466 full color photos
- 233 BROMELIADS •
- 28 GENERA •
- MANY NEW TO SCIENCE •

\$80 + \$7 for overseas freight  
Appropriate state sale tax

ORDER FROM:

Elisenda Andrews

16 Willow Lane

Cumberland, ME 04021

## PINEAPPLE PLACE BROMELIAD SPECIALISTS

3961 Markham Woods Road  
Longwood, Florida 32779  
(407) 333-0445 • Fax: (407) 829-6616

*Worldwide Shipping*

*We cater to purchasers of  
specimen plants in all genera.*

*Special prices to BSI Societies  
for bulk purchases.*

**SASE for list  
or come see us!**

*Carol & Geoffrey Johnson*

Open 1-5 P.M.  
Daily



Sunday By  
Appointment



## BROMELIAD BOOKS

Send for FREE 28-page catalog featuring  
172+ cactus books, + orchid, bromeliad, fern,  
South African, desert, stationery.

Sent surface mail anywhere in the world!

**RAINBOW GARDENS BOOKSHOP**  
1444 E. Taylor St. Vista, CA 92084  
Phone 619-758-4290  
visa/mc welcome

## ALVIM SEIDEL

Orquidario Catarinense Ltd.

Our Catalog No. 88 offers approximately 3,000 different Orchids and Bromeliads, species and hybrids. The Catalog also offers seeds. If you are interested in a copy of it, please send us US \$5.00 for airmail expenses (Cash Only). We cannot accept checks of such small value.

P.O. Box 1, 89280 CORUPA - S. Catarina, Brazil

Tel. (0473) 75-1244

Rua (Street) Roberto Seidel, 1981

Founder: Roberto Seidel, 1906

Telex 474 211 ORKI BR

INT. FAX No. 55-473 75 1042



## SOCIEDADE BRASILEIRA DE BROMÉLIAS

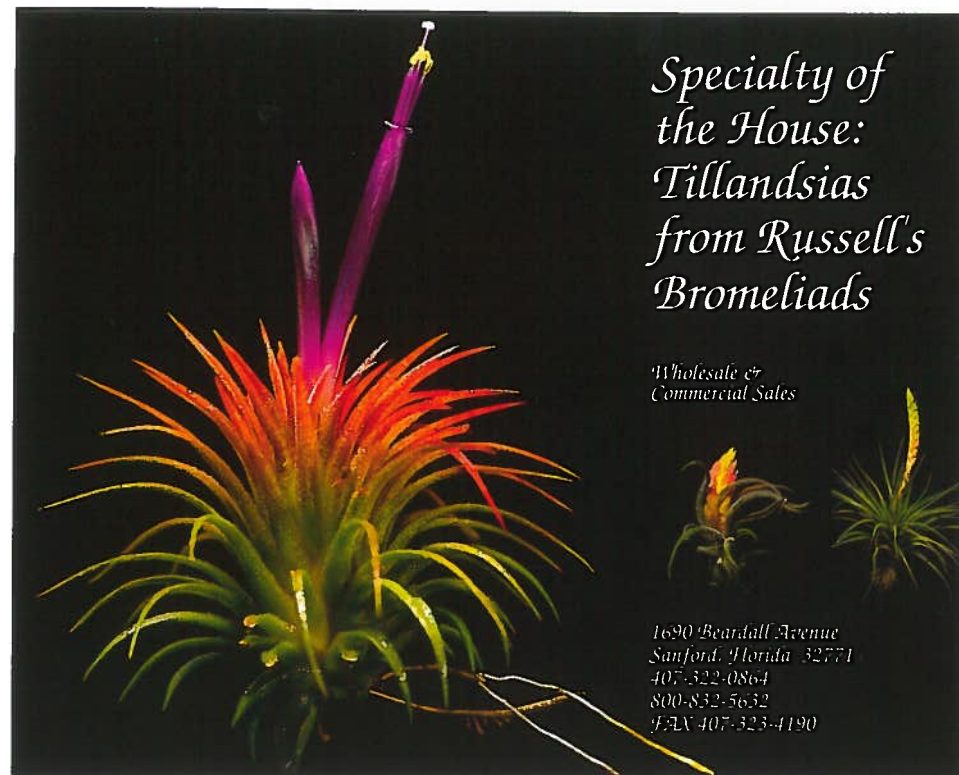
The journal **BROMÉLIA** is a quarterly publication of the Sociedade Brasileira de Bromélias, a civil non-profit organization aimed at promoting the conservation, dissemination and development of cultivation technique and scientific research of Bromeliaceae in Brazil.

SOCIEDADE BRASILEIRA DE BROMÉLIAS  
Caixa Postal 71034  
21015-970, Rio de Janeiro, RJ, Brazil

## orchidées cythere

- Wishes to buy your Neoregelia seeds
- Any good colorful hybrids
- We offer an average of \$80.00 per cross of 1000 seeds
- Valid for the next 12 months

Please make offer to:  
P.O. Box 2130 Papeete, Tahiti  
French Polynesia - Fax (689) 410 800



*Specialty of  
the House:  
Tillandsias  
from Russell's  
Bromeliads*

Wholesale &  
Commercial Sales

1690 Beardall Avenue  
Sanford, Florida 32771  
407-322-0864  
800-832-5632  
FAX 407-323-4190

You are invited to join  
**THE CRYPTANTHUS SOCIETY**  
the largest affiliate of The Bromeliad Society, Inc.



*learn how to grow the  
dazzling Earth Stars  
and make new friends  
all over the world.*

Membership (\$10 USA) (\$15 International) includes  
four colorful issues of *The Cryptanthus Society Journal*  
Ongoing Research and Plant Identification • Cultivar Publication  
Slide Library • Cultural Information Exchange • Registration Assistance  
International Shows with exhibits, seminars, tours and plant sales

Send SASE for culture information  
or \$3.00 for a sample journal to:  
Carole Richtmyer, Secretary  
18814 Cypress Mountain Dr.  
Spring, TX 77388 USA

## Cactus & Succulent Society of America Invites You to Join!

As a member you will receive:

- A Subscription to the *Cactus and Succulent Journal* (6 issues)
- Voting Privileges
- CSSA Newsletters

To begin your membership, send a check or money order for \$30 (U.S., Canada, Mexico) or \$35 (other countries) in U.S. dollars drawn on U.S. bank to:

CSSA, P.O. Box 35034  
Des Moines, IA 50315-0301 U.S.A.

## BROMELIAD SOCIETY SLIDES AVAILABLE

For Information Contact:

**Christopher Krumrey**  
5206 Robinsdale Lane  
Austin, TX 78723  
(512) 926-3302

E-mail: CKRUMREY@tab.com

## Tillandsias From Guatemala (Retail & Wholesale)

**Arthur Boe Distributor**  
P.O. Box 6655  
New Orleans, LA 70114

Enclose stamped, self-addressed  
envelope for flyer.

## SCHULTZ Kills Bugs On Contact!



Made with botanical pyrethrins from chrysanthemum flowers

Look for Schultz plant care products  
in leading floral and garden departments.



## VIRGIN CORK BARK!

Super for all plaqued species

By the piece or by the bale.

Ask about CORK NUGGETS, too!

Call for the Dealer or  
the Distributor nearest you!

**Maryland Cork Company, Inc.**

Toll Free: (800) 662-CORK  
Inside MD: (301) 398-2955

P.O. Box 126, Elkton, MD 21921



## ALBERT'S & MERKEL BROS., INC.

2210 S. Federal Highway • Boynton Beach, FL 33435-7799  
(US1 South of Woolbright Road)



**561-732-2071 • Fax 561-732-2078**

Send \$1 for Bromeliad List – Send \$1 for Tropical Foliage List  
Send \$1 for Orchid Price List

**OPEN WEEKDAYS 8:00 A.M. – 4:30 P.M. CLOSED SUNDAYS**

*A TRADITION IN BOYNTON SINCE 1936*

### JOB WANTED

- Graduating in December 1997 or early 1998 with a Ph.D degree in horticultural sciences.
- Have experience in micropropagation and mutagenesis of bromeliads, nursery management and hydroponics.
- Am multilingual

I'll be glad to send you my resume.

Please contact Mr. Koh at:

Tel (409) 845-5046 • Fax (409) 845-0626

E-mail: yckoh@tamu.edu

**Visit the BSI Web Site**

at

**<http://BSI.ORG>**

## The Bromeliad Society International

The purpose of this nonprofit corporation is to promote and maintain public and scientific interest in the research, development, preservation, and distribution of bromeliads, both natural and hybrid, throughout the world. You are invited to join.

### OFFICERS AND DIRECTORS

President – Jerry Raack, 472 Greenhollow Dr., Pataskala, OH 43062

Vice-President – Thomas W. Wolfe, 5211 Lake LeClaire Road, Lutz, FL., 33549

Editor – Chet Blackburn, 720 Millertown Road, Auburn, CA. 95603

Membership Secretary – Carolyn Schoenau, P.O. Box 12981, Gainesville, FL 32604

Secretary – Joyce L. Brehm, 5080 Dawne St., San Diego, CA. 92117

Treasurer – Clyde P. Jackson, 21 Sherwood, Dayton, TX 77535

Directors –

1996–1998 – Pamela Koide, *California*; Don Beadle, *Florida*; Harvey Beltz, *Louisiana*; Don Garrison, *Texas*; Jacqui Watts, *International*.

1997–1999 – Keith Golinski, *Australia*; Thelma O'Reilly, *California*; Dan Kinnard, *California*; Jack Reilly, *Central*; Hattie Lou Smith, *Florida*; Doris D. Bundy, *Northeast*; Bill Soerries, *Southern*, Sally Thompson, *Western*; Luiz Felipe Carvalho, *International*; Pedro Glucksmann, *International*.

1998–2000 – Peggy Bailey, *Florida*; John Anderson, *Texas*.

### HONORARY TRUSTEES

David H. Benzing, *United States*; Olwen Ferris, *Australia*; Grace M. Goode, *Australia*; A.B. Graf, *United States*; Roberto A. Kautsky, *Brazil*; Marcel Lecoufle, *France*; Elmer J. Lorenz, *United States*; Harry E. Luther, *United States*; Harold Martin, *New Zealand*; William Morris, *Australia*; Werner Rauh, *Germany*; Robert W. Read, *United States*.

### DIRECTORY OF COMMITTEE CHAIRMEN AND SERVICES

Affiliate Shows: Charlien Rose, 4933 Weeping Willow, Houston, TX 77092.

Affiliated Societies: Gene Schmidt, 9228 Vinland, Duluth, MN 55810

Conservation: Rolfe W. Smith, Longwood Gardens, P.O. Box 501, Kennett Square, PA 19348.

Cultivar Registration: Ellen Baskerville, 5555 Shady Brook Trail, Sarasota, FL 34243.

Finance & Audit: Don Garrison, 1119 Lisa Lane, Kingwood, TX 77339.

Judges Certification: Flo Adams, 3106 Clear Lake Ct., Arlington, TX 76017.

Membership and subscriptions to the JOURNAL: Please see inside front cover.

Mulford B. Foster Bromeliad Identification center: Send specimens and contributions to Harry E. Luther, at the Center, The Marie Selby Botanical Gardens, 811 South Palm Ave., Sarasota, FL 34236. FAX: 941-951-1474.

Publication Sales: Sally Thompson, 29275 N.E. Putnam Rd., Newberg, OR 97132.

Research Grant: David H. Benzing, Dept of Biology, Oberlin, OH 44074.

Seed Fund: Harvey C. Beltz, 6327 South Inwood Road, Shreveport, LA 71119-7260.

Slide Library: Christopher Krumrey, 5206 Robinsdale Lane, Austin, TX 78723

Web Site: Dan Kinnard, 32552 Alipaz St., #9d San Juan Capistrano, CA 92675

World Conference: Thomas W. Wolfe, 5211 Lake LeClaire Road, Lutz, FL 33549.





Kent's Bromeliad Nursery, a large California wholesale nursery, recently mailed a news release to its customers promoting the use of bromeliads as a Christmas plant. Bromeliads were suggested as an alternative to the ubiquitous poinsettia. They may be on to something. Can you think of any plant group that displays the traditional reds and greens associated with Christmas more brilliantly than do bromeliads? Some of the vrieseas and guzmanias would make striking Christmas plants, are very long-blooming, and need not be disposed of after the holidays. The photo at left shows a mass display of *Aechmea fasciata* during a recent Del Mar (California) Fair.

Photograph courtesy of Kent's Nursery.

## Calendar

- Jul 1-5, 1998 "Bromeliad Roundup", the 13th World Bromeliad Conference will be held in Houston, Texas at the Wyndham Greenspoint Hotel. Contact: Don & Betty Garrison, 1119 Lisa Lane, Kingwood, TX, USA, 77339-3429. Telephone 281-358-2641; Fax 281-359-1446; e-mail don\_betty@nhmced.campus.mci.net.
- Jul 1, 1998 BSI Judging School 2 will be taught by Valerie L. Steckler. All students passed School 1 and are encouraged to take this school. Consult the *Handbook for Judges, Exhibitors, and Affiliates* to confirm the topics and genera that will be taught. For information write or call Valerie L. Steckler, 1143 Paradise Lane, Ferriday, LA, 318-757-7346. Cost of the school is \$20.00.